

# Southeast Regional CoastWatch Program

NOAA Beaufort Laboratory

## Third Quarter Report

1 April - 30 June 2000

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### Program Staff

Jon Hare, Program Manager

Charlie Krouse, Operations Manager

Marlene Patterson, Special Projects

Randy Ferguson, Remote Sensing and GIS

### 1. User Registration

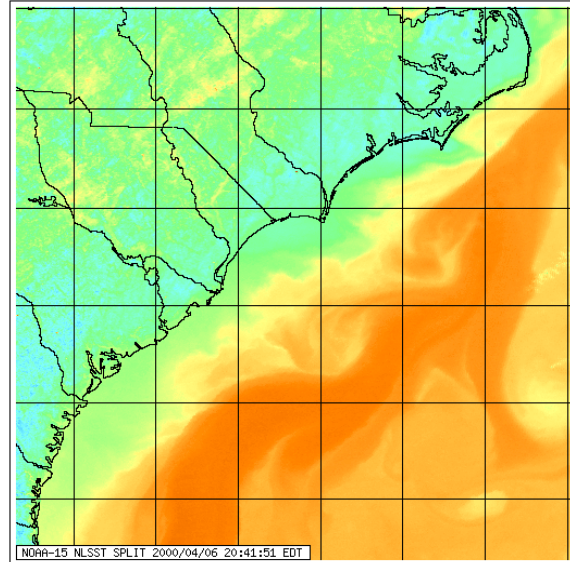
Since the initiation of our online registration system in February 2000, approximately 350 users have registered. This number is greater than the number of users that had registered under the old system between 1996 and February 2000. We will pass an updated user list to Bob Stone during the 4<sup>th</sup> Quarter.

### 2. WebSite Development

We have continued to make minor modifications to the web page, but no major changes have been made this quarter. Links to several projects have been added and these are discussed below.

### 3. System Operations:

System operations were relatively smooth. We have experienced several shutdowns owing to electrical problems and off-site loss of internet connectivity, but we are getting better at catching these in a timely



manner. Most of these shutdowns affect the entire NOAA Beaufort Laboratory and are beyond our control.

Marlene Patterson attended training for RSI's ENVI software. This training represent the second opportunity for Southeastern CoastWatch Program members to gain formal experience with IDL/ENVI environment. Charlie Krouse attended IDL Programming training during FY99. These training opportunities are a vital part of the Programs utilization of IDL/ENVI as a framework for product development and delivery.

We are currently redoing our assessment of the spatial reliability of SST data provided by the Southeast CoastWatch program. Results of a preliminary effort can be found at <http://www.bea.nmfs.gov/cw/georectification.html>. This preliminary effort used a linear shift of an image to a coastline and the shift was determined by eye using WIM. The new effort is more systematic and uses ENVI to apply ~40 ground control points to each image in the subset to be examined. This effort will allow us to more accurately describe spatial reliability in our SST products both over time and across individual images.

## 4. Product Development & Project Updates:

4.1 Development of 'Relatively' Cloudfree Image Archive - We continue to work on this on an ad hoc basis. We have had several users request imagery and have added to the 'cloudfree' archive accordingly.

### 4.2 OceanColor Support

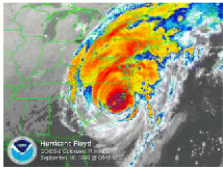
4.2.1 *Hurricane Floyd* - We have worked some with Dr. Pat Tester's group at the NOAA Beaufort Laboratory on the effects of Hurricane Floyd on the Pamlico Sound ecosystem. Jon Hare gave a talk at a meeting hosted by East Carolina University (Figure 1) - *In the Aftermath of Hurricane Floyd: Recovery in the Coastal Plain: Social, Physical, and Economic Impacts on Groups and Individuals* (<http://www.ecu.edu/coas/floyd/default.htm>). The talk was authored by Pat Tester, Robert Swift, Rick Stumpf, Jon Hare, Sabrina Varnam and Megan Black, and entitled "*Remote Sensing of Pamlico and Albemarle Sounds after Hurricane Floyd September 1999*". The focus of the talk was Dr. Tester's efforts to examine

*Social, Physical, and Economic Impacts on Groups and Individuals*

A Conference

Hosted by East Carolina University

May 24-26, 2000  
Mendenhall Student Center  
ECU Campus



Click image to see Hurricane Floyd landing on the NC coast. Warning the size is large (4 MCG) Download speeds may vary

In the wake of Hurricane Floyd and the flood that followed, it is necessary to come to an understanding of what happened, and to evaluate the impact Floyd had on eastern North Carolina. Based on the various responses to the disaster, what can be done to mitigate losses to life and property in the future needs to be determined. This conference brought together policymakers, research scientists, relief and recovery specialists, federal, state and local disaster experts and ordinary citizens, to address these topics. Participants placed Hurricane Floyd in the context of other natural disasters in the United States, reported on research findings on impacts, reviewed the environmental and geographical setting for the event, and convened assessment groups to recommend steps to mitigate loss of life and property in future extreme events.

Last Update: May 30, 2000

Contact: [Conference Committee](#)

the effects of Hurricane Floyd using remote-sensing. In situ measurements of chlorophyll were used to calibrate the measurements from remote sensors flown on NOAA aircraft and with ocean color sensors on SeaWiFS. A much broader geographic view of the effects of Hurricane Floyd is evident from remote platforms and this larger-view points to several significant areas that were not well sampled during cruises.

Jon Hare and Pat Tester also participated in a workshop designed to identify the important scientific issues facing coastal North Carolina. The workshop was attended by academic and federal researchers. The purpose was to design a larger workshop/symposium that would deal with coastal science questions. The products that CoastWatch could bring to bear on several topics were presented.

4.2.2 *Tag-a-Giant* - We continue to provide support for the work of Dr. Barbara Block from Stanford University. Her SST needs have extended beyond the coverage provided by CoastWatch but we are still working to help her get the SST data that she needs. Tyson Kade, a Master's student at Duke University, completed his project working with Dr. Block and Dr. Michael Orbach (Duke University) examining the relation between bluefin tagging locations and SST data from coastal North Carolina. Bluefin tuna apparently utilize the region between the mid-shelf front and the Gulf Stream front during their winter residency period off the North Carolina coast. We have also received an OceanColor request from Dr. Block and are currently putting together the data she requested.

4.2.3 *SeaWiFS Algorithm Development* - Dr. Tester continues to work with Dr. Rick Stumpf (NOAA/NOS/NCCOS/CCMA) in improving the regional chlorophyll algorithm

for SeaWiFS. The extremely high chlorophyll levels documented following Floyd were actually flagged as errors in previous SeaWiFS algorithms. Dr. Stumpf has improved the regional algorithm and reprocessed some imagery and there is now good agreement between field observations, aircraft -borne sensors and SeaWiFS measurements.

**4.3 Near Real Time SST Support** - There were no activities in this area during this quarter.

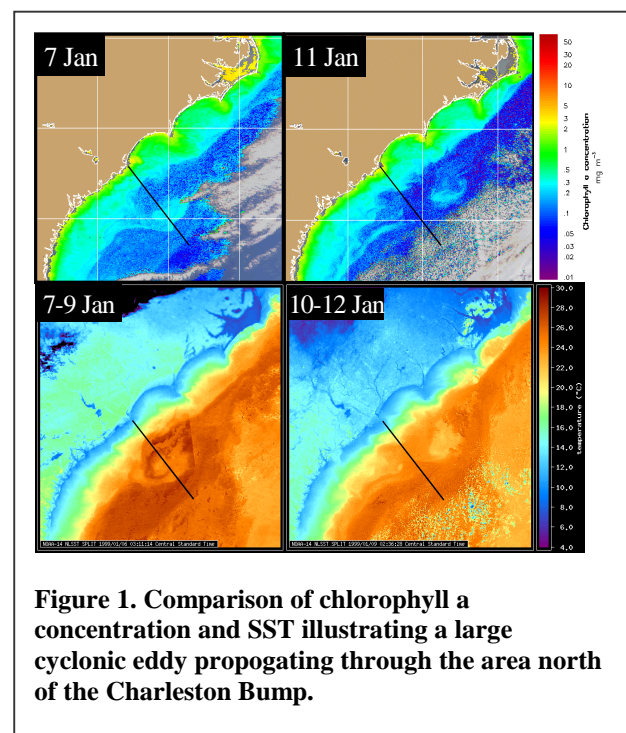
**4.4 Sea Turtle & Fisheries Interactions** - Joanne McNeill of the NOAA Beaufort Laboratory has finished her annual use of CW imagery to monitor SST in order to make decisions regarding sea turtle-fisheries interactions. We are discussing with Ms. McNeill ways that we can improve our support during the winter of 2000/2001.

**4.5 Fisheries Oceanography** - CW imagery continues to be used in fisheries oceanography research. As discussed in the second quarter report, CW imagery was used by Jeff Govoni and Jon Hare from the NOAA Beaufort Laboratory to elucidate the dynamics of the Charleston Gyre, a persistent cyclonic eddy found north of the Charleston Bump. Through examination of both OceanColor and SST images they concluded that the process of eddy formation downstream of the Charleston Bump occurs continuously for extended periods of time, but individual eddies shed and propagate downstream. These shedding eddies are evident in both OceanColor and SST images (Figure 1). The fate of individual eddies has great importance to utilization of the region as spawning, larval and juvenile fish habitat.

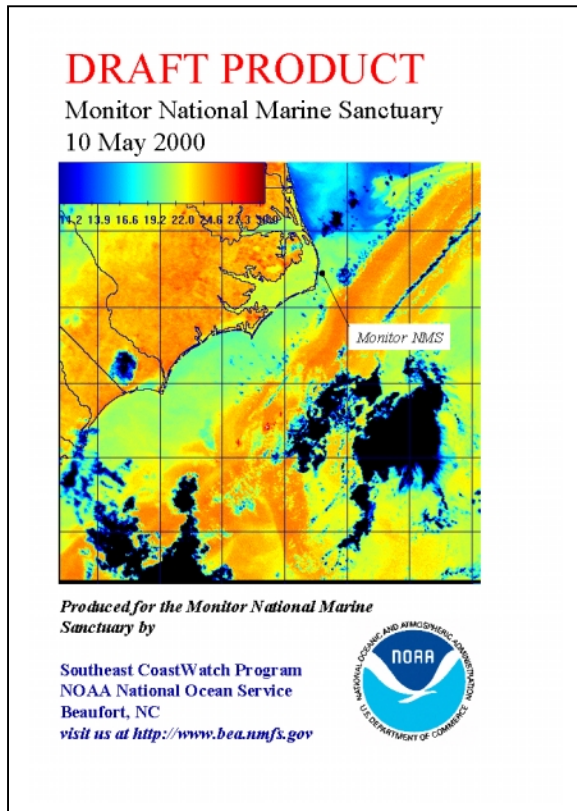
**4.6 Marine Mammal Investigations** - We continue to support the marine mammal

investigations of Aleta Hohn - NOAA Beaufort Laboratory. Caterina D'Agrosa, a PhD student at Duke University, is using CW imagery as part of her research examining the environmental influences on marine mammal distributions. Rochelle Newbold has finished her Masters at Duke and has completed data collection for a project examining the relation between dolphin strandings and changes in temperature structure on the southeastern US shelf. Her data are currently being worked up for publication.

CoastWatch data was used in two presentations by Dr. Hohn's group at the Eight Annual Atlantic Coastal Dolphin Conference. Rusin, Hohn, Hansen, Townsend and Scott - *Bottlenose dolphin winter movement patterns along the central North Carolina coast: results from telemetry* and D'Agrosa, Halpin and Roden - *Assessing the physical habitat of cetaceans in the southeastern U.S. Atlantic ocean using GIS, remote sensing and CART analysis*.



4.7 Sedimentary Processes Along the North Carolina Coast - A new interaction was started during the third quarter. Dr. John Wells of University of North Carolina's Institute of Marine Science and graduate student Chris Freeman are investigating the processes of sedimentation and evolution of Cape Lookout Shoals, NC. The Southeast CoastWatch program has been passing them SST imagery that coincides with their periods of field observations. Information developed by Caterina D'Agrosa on moving CoastWatch data into ArcInfo and ArcView has also been



provided. This is a long term interaction and more information will be provided in future quarterly reports.

#### 4.8 Southeastern National Marine Sanctuaries

- Interactions were also initiated with two National Marine Sanctuaries in the southeast: The Monitor NMS and Grays Reef NMS. The Monitor project is designed to provide Monitor Sanctuary researchers, users and managers with 'one-stop-shopping' for environmental data related to the Sanctuary location. Data is provided over the web to support real-time field observations. The most recent SST imagery, CMAN observations and weather forecast are collated and presented on one web page to make remote access by Sanctuary personnel easier. A similar project is in design for Grays Reef National Marine Sanctuary. The Monitor Project website is <http://www.bea.nmfs.gov/monitor/index.html>. We still have some formatting issues to deal with but the web page is currently being used by Sanctuary personnel and cooperators.

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*For more information please contact:*

Jon Hare  
NOAA Beaufort Laboratory  
101 Pivers Island Road  
Beaufort, NC 28516  
[Jon.Hare@noaa.gov](mailto:Jon.Hare@noaa.gov)  
Phone 252-728-8732  
FAX 252-728-8784

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